

CHAPTER 7600
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF WEIGHTS AND MEASURES
COMMERCIAL SCALES

SPECIFICATIONS FOR HEAVY CAPACITY PIVOT SCALES

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SPECIFICATIONS FOR HEAVY CAPACITY PIVOT SCALES

7600.0100 DEFINITIONS.

Subpart 1. Requested point. A requested point is a weighing station other than a terminal point where an industry has requested official state weights and where the scale or scales in question have been approved by the Track and Hopper Scale Division.

Subp. 2. Terminal points. Terminal points in Minnesota are Minneapolis, St. Paul, and Duluth, and such other points as may be so officially designated by the Public Service Commission.

Statutory Authority: *MS s 239.06*

7600.0200 APPLICATION.

These specifications are intended to apply to all scales under the jurisdiction of the Track and Hopper Scale Division, which includes, but is not limited to, track scales, hopper scales, and oil tank scales at terminal elevators and requested points where weights are taken on grain and its by-products, or hay, straw, and coal. They are intended to promote reasonable uniformity in scales for similar service without preventing progress or improvements. They do not apply to scales now in service but where a scale is found to be unreliable and unfit for service it shall be replaced with a scale to meet these specifications.

Statutory Authority: *MS s 239.06*

7600.0300 WAIVER OF RULES.

In cases where strict adherence to a particular rule can be shown to work an undue hardship on the scale owner, the supervisor of scales is authorized to waive a rule or portion thereof if sufficient reason is indicated and a satisfactory alternative is provided. All requests for such waivers must be in writing and must be submitted prior to the issuance of a permit for the installation of the scale.

Statutory Authority: *MS s 239.06*

7600.0400 PLANS TO BE FURNISHED BY MANUFACTURER AND PURCHASER.

The manufacturer shall furnish to the purchaser assembly plans, showing location of all field connections and all information necessary for the purchaser to erect the scale.

The purchaser of a scale shall furnish to the supervisor of scales the foregoing plans, together with the purchaser's plans, showing in detail the scale location, the construction and all commodity handling facilities and equipment, according to the class of scale and the purpose for which it is to be used.

Statutory Authority: *MS s 239.06*

History: *17 SR 1279*

7600.0500 PERMITS.

A scale shall not be installed until the plans of manufacture and building have been approved by the supervisor of scales and a permit for the installation has been issued.

Statutory Authority: *MS s 239.06*

7600.0600 SCALE APPROVAL.

A scale shall not be approved until after these specifications, tolerances, and requirements have been completely carried out.

Statutory Authority: *MS s 239.06*

7600.0700 CLASSIFICATION OF SCALES.

The specifications, as they are drawn up, cover and classify certain heavy duty scales into four different classes, according to the type of service to be performed and the method of weighing the commodity, viz.:

- A. railroad track scales, used in commercial and grain weighing service;
- B. hopper scales, used in grain weighing at terminal or requested points;
- C. tank scales, used in seed or vegetable oil weighing service at requested points;

and

D. a state weight scale is a scale on which grain and its by-products, or hay, straw, or coal are weighed by a bonded state weigher of the Grain Weighing Division and an official state weight certificate is issued on such weight.

Statutory Authority: *MS s 239.06*

7600.0800 PERTAINING TO SCALES AS CLASSIFIED IN A GENERAL WAY.

Subpart 1. Capacity defined. The capacity of a scale shall be equal to the weight of the heaviest load it will weigh without stresses being developed in the different scale parts that will impair the accuracy of the assembled scale. The strength of each member shall be determined by its weakest cross-section and scale parts shall not be stressed by loading beyond the rated capacity of the scale.

Subp. 2. Capacity required. The capacity of the scale shall be sufficient to meet the requirements of the heaviest service to which it is intended to be subjected.

Subp. 3. Design and fabrication of steel. The design and fabrication of steel shall be such that it will maintain the scale within the prescribed tolerance set forth in these specifications.

Subp. 4. Weighbridge checking. Provisions shall be made for adequate checking or staying the weighbridge or scale live frame against any disturbing force that occurs when the load is applied, or other actions which have a tendency to move it out of position.

Subp. 5. Extension levers to weighbeam. Scales shall not normally be designed or figured with additional levers between the scale proper and the weighbeam, other than what is known as the shelf lever. The overall length of this lever may be varied to suit, in locating the weighbeam. In exceptional cases where use of extension levers can be shown to be absolutely necessary, a minimum number of even-type levers may be permitted. In no case shall twister-type levers be permitted.

Subp. 6. Steelyard rod. A steelyard rod shall be equipped with a turnbuckle.

Subp. 7. Locknuts. Bolts or turnbuckles used as a part of the connections shall be provided with locknuts.

Statutory Authority: *MS s 239.06*

7600.0900 CHARACTER AND FINISHING OF SCALE PARTS.

Subpart 1. Condition of scales. All the scale parts shall be such that they are not unduly warped or unnecessarily imperfect.

Subp. 2. Finishing. Each scale part shall be finished true to form and essential dimensions; and parts that are designed to have surfaces come in contact with other parts are to have the contacting surfaces finished to a true, even surface.

Subp. 3. Dirt shields. The scale bearings and all other parts that are, or may be, subject to dust and dirt or other conditions, such as water and ice or foreign material, shall be protected in some form or manner by a suitable shield that will sufficiently guard these parts against such conditions.

Subp. 4. Clearances; fixed and live parts. The clearance around and between the different scale parts of the lever system when assembled shall be at least one-half inch. The clearance around and between all the structural fixed parts and the scale live parts shall be not less than one inch after installation, except at points where other clearances are specified. An all-around clearance of the steelyard rod shall be not less than two inches.

Subp. 5. Field painting. The structural steel work and lever system shall be cleaned and painted with one coat, and preferably two coats, of paint in the field before acceptance.

Statutory Authority: *MS s 239.06*

7600.1000 LEVER AND FULCRUM BEARING STANDS; DESIGN AND DIMENSIONS.

The stand shall be so designed that the upright position is centrally located in relation to the base, and the bottom surface of the stand shall be true and on a parallel line with the pivot

knife-edge bearing surface. The dimensions of the stand shall be such that it will support correctly the proportional load imposed on it and remain in proper position under all loading up to the capacity of the scale it is designed for. Suitable means shall be provided for aligning and securely anchoring the stand in place.

Statutory Authority: *MS s 239.06*

7600.1100 MAIN LOAD BEARING STANDS.

The top surface of the main load bearing stand castings that makes contact with the weighbridge girder or scale frame shall be finished true to a plane parallel to the surface of the bearing steel and so that all these stands will be the same height and level with each other when assembled in the scale. Holes shall be provided in the top of the casting, suitable for aligning and staying the stand in position and place.

Statutory Authority: *MS s 239.06*

7600.1200 SCALE LEVERS.

Subpart 1. **General characteristics.** Each scale lever shall be designed and built in such a manner that it will not spring or deflect in any degree that will affect the accuracy of that lever when subjected to capacity loading.

Subp. 2. **Length.** Each lever shall be reasonably true to its nominal length.

Subp. 3. **Multiple marking.** On track and hopper scales the multiple shall be cast or otherwise permanently marked in plain figures on each lever.

Subp. 4. **Leveling lugs.** Each lever shall be equipped with leveling lugs, spaced 11 inches apart. The top surfaces of each pair of lugs shall be finished true to a plane, parallel to the pivot knife-edges.

Subp. 5. **Machined ways for nose irons.** Levers that are to be equipped with nose irons shall have those portions of the lever receiving them machined true for the full distance over which the nose iron can be moved.

Statutory Authority: *MS s 239.06*

7600.1300 LEVER NOSE IRONS ON TRACK AND HOPPER SCALES.

Subpart 1. **Finish and placing.** The surfaces of the nose iron that come in slidable contact with the lever shall be machined true so as to secure an accurate fit on the lever. The nose iron casting shall be of such design that when it is moved, the pivot knife-edge will remain in proper position in respect to the other pivot knife-edge in the lever.

Subp. 2. **Method of fastening.** The nose iron shall be firmly fastened to the lever with bolts of a recognized standard size and thread. The bolts shall be so placed and used that indentations will not be made in the lever, and shall be independent of any means provided for moving the nose iron. The nose iron shall be held against the lever in the same direction as it is forced by the load.

Subp. 3. **Control of nose iron movement.** The movement of the nose iron shall be controlled by an adjusting screw of suitable size and strength for the purpose for which it is to be used. The screw shall be made of a metal that will resist corrosion.

Subp. 4. **Marking of position.** The position of each nose iron, as determined by the factory adjustment, shall be accurately, clearly and permanently indicated by a well-defined mark on the lever and on the nose iron, which marks shall meet on a common line.

Statutory Authority: *MS s 239.06*

7600.1400 SCALE PIVOTS.

Subpart 1. **Design.** All pivots shall be designed and manufactured so that the sides joining to form the knife-edge shall make an angle that will not exceed 90 degrees; that the tolerance for offset of the knife-edge of the pivot, as figured from the center line of the pivot at its base, shall be within ten percent of the width of the pivot.

Subp. 2. **Fastening.** All pivots shall be firmly fastened in position, without swedging or caulking.

Subp. 3. **Continuous contact.** All pivots shall be mounted so as to secure equal and continuous contact of the knife-edges with their respective bearings for the full length of the

parts designed to be in contact; in loop bearings the knife-edges shall project slightly beyond the bearings in the loops.

Subp. 4. **Position.** The pivots shall be so mounted that each knife-edge in a given lever will be maintained in a horizontal plane; and so that a plane bisecting the angle of a knife-edge will be perpendicular to the horizontal plane established by the knife-edges of the pivots, and so that the knife-edges in a given lever will be parallel to each other.

Subp. 5. **Location of main lever load pivot.** The load pivot of the main lever shall be so located in the lever that the imposed load will be carried in a direct line over the pivot knife-edge.

Statutory Authority: *MS s 239.06*

7600.1500 ANTIFRICTION POINTS AND PLATES.

Subpart 1. **Where antifriction points and plates required.** Antifriction points and plates shall be provided to limit the relative lengthwise displacement of all knife-edges with respect to their bearings and this lengthwise displacement shall not exceed one-eighth of an inch and shall not be less than 1/16 of an inch.

Subp. 2. **Material.** The antifriction points and plates shall be made of hardened carbon steel and the plates shall be at least as hard as the points which come in contact with them.

Statutory Authority: *MS s 239.06*

7600.1600 BEARING STEELS.

Subpart 1. **Physical properties.** The bearing steel shall be equal or greater in hardness than the opposing knife-edges.

Subp. 2. **Design.** They shall be so formed that the opposing knife-edge will remain centrally located and friction will be reduced to a minimum if contact is made with antifriction plate. Self-aligning bearings shall be used wherever practicable.

Subp. 3. **Finish.** The bearing surfaces shall be brought to a smooth, true, and accurate finish to provide continuity of contact with the opposing knife-edges.

Statutory Authority: *MS s 239.06*

7600.1700 WEIGHBEAM.

Subpart 1. **Weighbeam standard and mounting.** The weighbeam standard shall consist of cast iron pillars or their equivalent and a substantial shelf on which shall be firmly mounted, in correct position, a weight imposed fulcrum stand and a trig loop stand. The elevation of the beam from the floor shall be approximately on the line of vision of an operator of average height. For style and capacity, see specifications herewith incorporated for Railroad Track Scales, part 7600.1900, subparts 1 to 4; Grain Hopper Scales and Oil Tank Scales, part 7600.2800, subparts 1 to 4.

Subp. 2. **Design.** The beam shall be rigid and in proportion with the main levers of the scale. A shoulder or other substantial device for blocking shall be shaped or attached to the main bar, located so as to stop the poise and assure its taking the correct position at the zero graduation and at maximum capacity. The shoulder or blocking device shall act separately and have no connection with the pawl of the poise.

Subp. 3. **Finish.** The beam shall be finished in the highest degree of care and accuracy in all respects. The surface or track over which the main poise travels shall be straight and true and so formed that the poise will be guided and held on a true, even line, and roll smoothly over it.

Subp. 4. **Ratio marking.** The tip ratio shall be an even multiple. The butt and tip ratio pull shall be marked on the main bar of the beam in a distinct and permanent manner, on all track and hopper scales.

Subp. 5. **Reading face plate.** The reading face shall be laid out and marked on a rust-resisting, polished metal plate, fastened firmly and securely in place.

Subp. 6. **Reading face marking.** The marking of the reading face for denoting the different weights shall be in clear-cut, durable lines and figures, fully distinguishable and non-confusing to the eye. The lines shall be uniform in spacing and parallel with each other and correspond correctly with the graduated weight intervals of the main bar.

Subp. 7. **Balance ball.** A suitable weight shall be firmly attached to the weighbeam main bar, so mounted that it can be raised or lowered within a reasonable distance. The back and forward movement of this weight shall be controlled by a self-contained hand-operated screw, and not by the act of rotating the weight.

Subp. 8. **Type figures.** The type figures shall be made of a material suitable to withstand a reasonable amount of severe service performed and give a clear impression. They shall be fastened firmly and securely in place, so as to be in line and correspond correctly with the weight intervals of the beam.

Subp. 9. **Poise design.** The poise shall be so designed that the accumulation of dust and dirt will be prevented as much as possible. It shall be mechanically built and so fitted that it will move in a smooth, even, true manner over the full distance of travel with the least possible effort and disturbance of the beam. The method or device used for setting or bringing the poise into the weight interval position shall be substantially constructed and so formed that it will be free from all undue or foreign interference with its correct operation. It shall be positive and accurate in setting at any of the weight intervals of the beam.

Subp. 10. **Identification of parts.** Each beam shall be given a serial number which shall be stamped on the beam or plate.

Subp. 11. **Trig loop.** The contact parts of the trig loop on track and hopper scales shall be made of nonmagnetic material.

Subp. 12. **Play of the beam.** The play of the beam in the trig loop shall be two percent of the distance from the trig loop to the knife-edge of the fulcrum pivot and, in no case, shall exceed one inch.

Subp. 13. **Counterbalance weight.** The counterbalance weight shall consist of a counterpoise hanger and separate weights. The hanger cup shall remain on the lower end of the rod and all other weights used placed over it by passing them over the hook end of the rod. No open slot weights shall be used in making up the weight as one unit. If the hanger is used alone and other weights are not needed, the cover of the cup shall be held in place by a threaded nut.

Statutory Authority: *MS s 239.06*

History: *17 SR 1279*

RAILROAD TRACK SCALES

7600.1800 LENGTH OF SCALE AND NUMBER OF SECTIONS.

Subpart 1. **Length defined.** The length of a scale shall be considered as the effective weighing length of the scale live rails or the live platform.

Subp. 2. **Number of sections.** No scale shall be installed with more than four sections.

Statutory Authority: *MS s 239.081*

7600.1900 WEIGHBEAM.

Subpart 1. **Capacity.** The maximum graduated and marked capacity of the weighbeam shall not be greater than two times the sectional capacity of the scale.

Subp. 2. **Style.** The weighbeam shall be of the full capacity type-registering pattern.

Subp. 3. **Main bar graduations.** The main bar shall be graduated in 1,000 pound intervals and such intervals shall not exceed six to the inch.

Subp. 4. **Fractional bar.** The graduations for the fractional bar on all track scales shall be 20 pounds.

Statutory Authority: *MS s 239.081*

7600.2000 SCALE LOCATION.

Subpart 1. **Lateral clearance.** The lateral clearance or the distance between any structure and the longitudinal center line of the scale deck or any car track shall not be less than eight feet, six inches. For scale approach, see specifications herewith incorporated for Railroad Track Scales, part 7600.3000, subparts 3 and 5.

Subp. 2. **Scale elevation.** The scale deck shall be elevated to a point above the surface of the adjacent ground and all other conditions shall be so arranged that the flow of all water will

be away from the scale. The prevention of water entering the scale pit from any source must be given full consideration.

Subp. 3. **Shed over grain scales.** Scales over which grain or the by-products from same are weighed shall be completely covered with a suitable shed with end doors.

Statutory Authority: *MS s 239.081*

7600.2100 SCALE FOUNDATION.

Subpart 1. **Soil bearing.** If the soil on which the scale foundation is to rest has not a bearing capacity equal to 4,000 pounds per square foot, the bearing capacity shall be increased to the equivalent of that amount by the best engineering practice suitable for the existing conditions.

Subp. 2. **Material.** The foundation shall be constructed of concrete. The qualities of the materials and the method of mixing and placing the concrete shall be in accordance with the railroad's specifications for first-class concrete or its equivalent.

Subp. 3. **Dimensions.** The foundation shall extend downward to a depth sufficient to provide a finished pit seven feet deep, measuring from the top of the finished foundation wall to the top surface of the finished pit floor. For the other inside dimensions of the pit, see specifications herewith incorporated for Railroad Track Scales, part 7600.3000, subpart 4.

Subp. 4. **Footings or piers.** The footings for the scale sections shall be of reinforced concrete, not less than 18 inches thick, or that which is equivalent, and of other dimensions proper and suitable for the design and capacity of the scale. The section piers shall be symmetrical and securely placed on or formed with the footings and rise above the pit floor at least six inches. They shall be finished level and with proper elevation for the scale setting. If the scale is of a type having levers or scale live parts that hang below the base of the fulcrum stand, a bottom clearance of not less than six inches shall be provided and a side all-around clearance of not less than two inches.

Subp. 5. **Anchor bolts.** Suitable anchor bolts shall be placed in proper position in the foundation for all the lever fulcrum stands. The bolts that are located in the section footings or lower part of the foundation shall not extend closer than six inches from the bottom or lower surface of the concrete.

Subp. 6. **Anchorage for floating levers.** For floating levers, that is, a lever that is anchored at the fulcrum, said lever shall be anchored so as to resist not less than twice the uplift produced at the fulcrum by a capacity loading of the scale.

Subp. 7. **Foundation walls.** The foundation shall be a uniform continuous wall and for railroad track scales at least 15 inches thick. If the wall is exposed or subject to outside forces, such as freezing or packing earth, it shall be constructed with a uniform batter on the outer side, of not less than one inch to the foot, with other staying and bracing if deemed necessary.

Subp. 8. **Scale house foundation and weighbeam support.** The foundation for the scale house and the weighbeam support shall be a continuation and form part of the scale foundation wall, or if the weighbeam is to be located in an adjoining structure, the foundation shall be the same character and equally substantial.

Subp. 9. **Entrance to scale pit.** The entrance to the scale pit shall be through the floor of the scale house, through the foundation wall, or through the scale deck. In any case, a suitable means shall be provided to close the opening and a ladder or steps to pit floor shall be provided. For scale approach, see specifications herewith incorporated for Railroad Track Scales, part 7600.3000, subpart 5.

Statutory Authority: *MS s 239.081*

7600.2200 ASSEMBLING AND SETTING OF SCALE.

Subpart 1. **Fulcrum stands.** All the fulcrum stands shall rest directly on concrete or that which is equivalent, without the use of inferior grouting, and shall be set in true position and held securely in place by proper anchorage.

Subp. 2. **Levers and connections.** The scale levers shall be set level and in line with all the connections, plumb, and the pivot knife-edges centered truly and in their respective bearings.

Subp. 3. **Location of weighbeam.** The weighbeam shall be located as close to the transverse center line of the scale as possible and on a line with the scale deck or platform.

Subp. 4. **Setting of weighbeam.** The weighbeam shall be set with the reading face turned away from the scale proper so that when it is being used the person handling it will be facing the scale. The pillars supporting the weighbeam standard shall rest directly on the concrete without the use of soft filling of any kind and the complete standard shall be level and plumb and anchored securely in position.

Statutory Authority: *MS s 239.081*

7600.2300 SCALE WEIGHBRIDGE.

Subpart 1. **Character.** The scale weighbridge shall conform in all respects to the type and capacity of the scale.

Subp. 2. **Main girders.** The main girders may be either of the continuous type or the noncontinuous type, but with the noncontinuous girder the joints shall be placed directly over the centers of the weighbridge bearings.

Subp. 3. **Design and fabrication.** The weighbridge shall be designed and fabricated so that an evenly distributed loading will be carried on the scale sections. It shall have the proper transverse and lateral bracing and be sufficiently rigid to withstand capacity loads moving over it without causing harmful disturbance or displacement of scale parts. For steel requirements and fabrication see specifications herewith incorporated, part 7600.1300, subpart 3.

Statutory Authority: *MS s 239.081*

7600.2400 WEIGHBEAM HOUSE.

Subpart 1. **Design.** The weighbeam house shall be designed and built with a bay window on the side that is toward the scale deck or platform. The minimum inside width of the house shall be four feet and the length shall be sufficient to allow for a central position setting of the weighbeam standard in the cove of the bay window. The window shall be of sufficient size to give a clear and unobstructed view of the scale deck or platform and scale approach at either end of the scale while standing at the beam in weighing position.

Subp. 2. **Scale lighting.** Proper and sufficient lighting shall be provided for the weighbeam reading, the scale deck or platform at each end, and the scale pit.

Subp. 3. **Ventilation.** If the conditions are such that ventilation is needed in the scale pit or in the weighbeam house to prevent or to overcome dampness and the rusting of scale parts, proper ventilation equipment shall be installed.

Statutory Authority: *MS s 239.081*

GRAIN HOPPER SCALES AND OIL TANK SCALES

7600.2500 SCALE CAPACITY, LOCATION, AND CLEARANCE.

Subpart 1. **Scale capacity.** Grain hopper beam scales shall have a minimum capacity of 2,500 bushels. Oil tank scales shall be of sufficient size and capacity so that the heaviest estimated load handled can be weighed in one draft.

Subp. 2. **Scale location.** The scale shall be so located that it will be conveniently accessible for inspection and maintenance and so that standard test weights can be suspended from each corner of the weighbridge without interference. It shall not be located over an open pit or tank and it shall be protected from strong air currents and excessive vibration.

Subp. 3. **Hopper clearance.** A clearance space of at least 12 inches between the side wall of the scale hopper or tank and any part of the building or any other structure shall be provided and a six inch clearance space at the top.

Subp. 4. **Weighbeam location.** The weighbeam shall be located on the same floor as the scale hopper and in such a way that there will be an unobstructed view of same from the weigher's office.

Statutory Authority: *MS s 239.06*

7600.2600 FOUNDATION.

The foundation or supporting structure for the scale shall be constructed so as to conform with good engineering practice and it shall be adequate in accordance with the rated capacity of the scale. It is to be level and free from settlement and variable alignment. The

weighbeam supporting structure shall be a continuation of and an integral part of the main foundation for the scale.

Statutory Authority: *MS s 239.06*

7600.2700 ASSEMBLING AND SETTING SCALE LEVER SYSTEM.

Subpart 1. **Assemblage of parts.** The scale is to be assembled and installed with each part being placed according to the manufacturer's designated and marked location.

Subp. 2. **Setting of fulcrum bearings.** The fulcrum bearings of either the stand or plate and eye bolt pattern shall be set in the same correct, permanent manner. They are to be set solid, level, and plumb, without the use of inferior filling and anchored securely in place.

Subp. 3. **Weighbeam setting.** The pillars for the weighbeam standard, or dial, shall be set in the same manner as the fulcrum bearings and with the other parts making up the complete assembled standard, being placed properly and fastened firmly and securely in place.

Subp. 4. **Scale levers.** The scale levers are to be set level, the connections plumb, and the pivot knife-edge centered in their respective bearings.

Subp. 5. **Setting of weighbridge bearings.** The weighbridge bearings shall be placed with the bearing steels on a true center line of their respective pivot knife-edges. They are to be plumb and level with the top surfaces, all on the same level plane.

Subp. 6. **Weighbridge.** The weighbridge shall be of steel construction, so designed and fabricated that an evenly distributed loading will be carried on a direct line over the center of the load pivot knife-edges. It shall have a true, even rest on the bearing stands and shall be bolted securely thereto in true position without the use of inferior filling.

Statutory Authority: *MS s 239.06*

7600.2800 WEIGHBEAM AND ACCESSORIES.

Subpart 1. **Style.** The weighbeam shall be of the type-registering, fractional weigharm type, with counterpoise weights being used for the 1,000 pound multiples. The beam weigharm shall be graduated into five-pound intervals.

Subp. 2. **Counterpoise weights.** The counterpoise weights shall have a ratio of one pound to 1,000 pounds. They shall be made of a compact, dense metal, not softer than hard brass. They shall be uniform and true in dimension, according to the weight multiple, with flat, smooth surfaces, and free from flaws and sharp edges. The surfaces shall be reasonably permanent in wear-resistant qualities and nontarnishable in finish. Each weight shall have the denomination stamped into the side surface, in plain, well-defined, distinct figures.

Subp. 3. **Counterpoise hanger.** The counterpoise hanger shall be substantially designed and built, with the cup and the cup cover being fastened securely in place.

Subp. 4. **Weight rack.** A suitable weight rack that will hold the weights and give them reasonable protection, shall be provided. It shall be located in a convenient position for quick handling of the weights.

Statutory Authority: *MS s 239.06*

7600.2900 METHOD OF SCALE TEST.

The method to be used in testing the scale for weighing accuracy shall be by the suspension of standard test weights at each corner of the weighbridge, suspended from a point as near as possible over the centers of the main bearings. A suitable permanent device to which the suspension equipment may be connected shall be properly located and placed on each corner of the weighbridge. There is to be no obstruction, such as machinery, spouting, or insufficient wall clearance, etc., that will interfere with the free suspension of the weights. The required obstruction-free area under each center point shall be not less than ten square feet and shall be in the form of a square with a midpoint directly under the center point.

Statutory Authority: *MS s 239.06*

RAILROAD TRACK SCALES

7600.3000 LOCATION, DIMENSIONS, AND APPROACH.

Subpart 1. **Scale length defined.** The length of the scale shall be considered as the effective weighing length of the live rails, and in no case shall the length of these rails be greater than the distance between the centers of the end sections.

Subp. 2. **Scale length standardized.** The scale shall be not less than 50 feet in length and no scale with a rated capacity of less than 75 tons per section shall be installed or relocated.

Subp. 3. **Scale location.** The location of the scale must observe all clearance laws and shall be so located that there will be at least 50 feet of straight track at each end of the scale.

Subp. 4. **Scale pit dimensions.** The width of the scale pit, between the inside faces of the side walls shall be not less than ten feet, and the clearance between the inside faces of the end walls shall be not less than 16 inches between the end lever fulcrum bearing and the end wall.

Subp. 5. **Approach piers.** Concrete piers shall be built at each end of the scale, running parallel with the foundation side walls and extending back from the end walls, at least 15 feet. They shall be formed independent of the end walls and rest on a safe footing as to bearing capacity, so that a permanent, level approach to the scale will be maintained.

Statutory Authority: *MS s 239.081*

7600.3100 SCALE RAILS.

Subpart 1. **Weight and section.** The weight and section of the rails used for the scale, when the supporting elements are spaced two feet, six inches, center to center, shall be not less than 100 pound rails and for greater spacing, the weight of the rails shall be increased accordingly. Full length rails, without splices, are desirable, but in any case new rails shall be used. If splices are necessary, they shall be accurately applied.

Subp. 2. **Live rail pedestals.** The live rails shall be carried on metal pedestals, which are mounted on metal ties, or rest directly on the weighbridge girders, but in either case they shall have a true, even, full bearing. They shall be set so as to be centered in a line with the main bearing load pivot knife—edges and bolted firmly and securely in place, with the top surfaces in true line and level and all on the same plane.

Subp. 3. **Live rails.** The scale live rails shall be set in true line and plane, free from settlement, and anchored or stayed securely in place so as to prevent creeping.

Subp. 4. **Approach rails.** The approach rails shall be set rigid and free from settlement, on a true line and plane with the scale live rails. Positive means shall be provided to prevent the rails from creeping, so that a permanent clearance space of a minimum of three—eighths of an inch and a maximum of five—eighths of an inch will be maintained between the ends of the rails adjacent to the live rails.

Statutory Authority: *MS s 239.081*

7600.3200 SCALE DECK CONSTRUCTION.

Subpart 1. **Deck girders.** If the deck girders are to support a dead rail track, suitable transverse steel I beams shall be used to carry it and all such steel beams and the setting of same shall conform to the specifications of the American Railway Engineering Association, or those of the railroad on which the scale is located. If a dead rail track is not required, the deck supporting armature shall be designed and built according to good engineering practice for such construction.

Subp. 2. **Girder clearance.** The clearance between the bottom of the girders and the top of the weighbridge girders shall be not less than two inches.

Subp. 3. **Material.** The material for the deck covering can be either reinforced concrete, wood planking, or other suitable material approved by the commission, but in any case it must be impervious to dirt and water, and so designed and finished that a permanent clearance between the deck and the live rails will be maintained.

Subp. 4. **Rigid deck clearance.** The clearance between the live rail pedestals and the edge of the deck shall be not less than 1—1/2 inches.

Subp. 5. **Steel strips.** The opening or space between the live rails and the scale deck, on a rigid deck, shall be completely covered by steel strips or plates. These strips or plates shall be not less than one—eighth inch in thickness and so formed and fastened in place that they will not create any harmful friction or scale interference but may be easily thrown back or removed for inspection and cleaning. See approved sketches for steel strips: part 7600.9900.

Statutory Authority: *MS s 239.081*

7600.3300 DEAD RAIL TRACK.

A dead rail track is recommended when the scale track is connected with other tracks at both ends of the scale and the scale can be approached from either direction by traction power of any kind, or when fast movement of cars over the scale is possible.

Statutory Authority: *MS s 239.081*

7600.3400 MOTION WEIGHING.

Subpart 1. Scale design and construction. A track scale that is to be used in weighing cars while they are moving across the scale shall be designed and constructed with all the special details being considered and fully carried out that are particularly necessary in this method of weighing.

Subp. 2. Length of live rail and car movement. The length of the live rails shall be such that, at speed not to exceed four miles per hour, the load being weighed will be on the scale live rails a minimum of three seconds.

Statutory Authority: *MS s 239.081*

GRAIN HOPPER SCALES**7600.3500 SCALE LOCATION.**

Subpart 1. Scale. The scale shall be so located that the distance the grain is to be moved between the receiving pit and the scale will be as short a traveling distance as practicable.

Subp. 2. Lever system and beam. The lever system and beam shall be on the same floor and the hopper shall be directly over the lever system.

Subp. 3. Interferences. No pipes, signal wires, or other obstructions of similar nature shall pass through a scale hopper or be attached thereto.

Statutory Authority: *MS s 239.06*

7600.3600 RECEIVING PIT.

Subpart 1. Capacity. The pit into which the grain is unloaded shall be designed and built so that it will hold an average load of grain.

Subp. 2. Construction. The pit shall be substantially built, grain-tight, finished smooth on the inside, and free from all obstructions. The bottom shall be so formed that the pitch or slope of same will be not less than 45 degrees at any point.

Subp. 3. Discharge valve. The discharge valve shall be a substantial iron or steel grain-tight valve, equipped with a suitable device that will indicate the open and closed position of the valves. Where there are two or more receiving pits, from which the grain can be drawn and delivered to one scale, the discharge valves from the pits shall be arranged and constructed with a safety locking device that will prevent the grain being drawn from more than one pit at a time.

Subp. 4. Grating and surrounding floor. The top of the pit shall be covered with a substantial grating, with a suitable entrance section for pit inspection. A substantial, grain-tight floor shall be laid around the top of the pit, of a sufficient area to allow a thorough cleanup of all spilled grain.

Statutory Authority: *MS s 239.06*

7600.3700 RECEIVING LEG AND GRAIN MOVEMENT.

Subpart 1. Location of leg. The receiving leg shall be located adjacent to or as near as possible to the receiving pit.

Subp. 2. Leg construction. The leg shall be substantially constructed, grain-tight, and with sufficient clearance around the base for cleaning and inspection.

Subp. 3. Grain movement. The grain movement from the receiving pit into the leg and from the leg to the garner shall be direct and positive and the grain handling equipment shall be such that the loss of grain in the movement shall be cut to a minimum.

Subp. 4. Grain spouting. All spouting that is used for the movement of grain to and from the scale shall be substantial and grain-tight. In the case of a shipping spout it shall be direct and positive in grain movement to the loading point. If the spout passes through a bin or

a concealed part of the building, it shall be encased so as to move any grain leaking from the spout to a point in the building where it will be noticed and returned to the point of origin.

Statutory Authority: *MS s 239.06*

7600.3800 SCALE GARNER.

Subpart 1. **Location.** A garner, holding approximately an average load of grain, shall be constructed directly over the scale hopper.

Subp. 2. **Construction.** The garner shall be substantially constructed, grain-tight, finished smooth on the inside, and free from all obstructions. The bottom shall be so formed that the pitch or slope will be not less than 45 degrees at any point.

Subp. 3. **Discharge valve.** The discharge valve or valves shall be of iron or steel, substantially constructed, and grain-tight when closed. They shall be located and placed in the bottom of the garner so as to assure a complete delivery of all grain and an evenly distributed load in the scale hopper.

Subp. 4. **Valve control.** The device for operating the garner valves shall be located so as to be within convenient reach of the tip end of the weighbeam. Contiguous garner valve controls shall move in the same direction to perform similar functions.

Subp. 5. **Provisions for inspection.** An opening of sufficient size to permit entrance and a suitable ladder leading to the bottom of the garner and adequate lighting shall be provided.

Statutory Authority: *MS s 239.06*

7600.3900 SCALE HOPPER.

Subpart 1. **Capacity.** The scale hopper shall be of a capacity not greater than the rated capacity of the scale levers in wheat bushels.

Subp. 2. **Construction.** The scale hopper shall be substantially constructed, grain-tight, finished smooth and free from all obstructions on the inside. The bottom shall be so formed that the pitch or slope will be not less than 45 degrees at any point. The discharge valve shall be made of iron or steel and so constructed that it will not leak. It shall operate freely so as not to cause any harmful scale disturbance.

Subp. 3. **Discharge valve control.** The control for operating the discharge valve shall be located on the weighbeam side of the hopper, within convenient reach of the tip end of the beam, and anchored or fastened to the live part of the scale. If there are two or more hopper scales in a given elevator, the valve controls shall all operate in like manner and move in the same general direction.

Subp. 4. **Sample opening and inspection window.** A small boxed-in opening, about hand size, for sampling purposes, and a small inspection window shall be provided on the weighbeam side of the hopper, constructed and installed so as to be grain-tight.

Subp. 5. **Inspection door.** There shall be a grain-tight door in the scale hopper, located near the top, sufficient in size to permit of entrance, and a suitable ladder leading to it.

Statutory Authority: *MS s 239.06*

7600.4000 AIR RELEASE VENTS.

Air release vents of sufficient cross-sectional area to relieve the pressure caused by the movement of grain into the garner and from the garner into the scale hopper shall be provided and installed so as to assure of no scale interference from that source.

Statutory Authority: *MS s 239.06*

7600.4100 DUST CONTROL AND DUST CURTAINS.

Subpart 1. **Dust control.** All possible precaution shall be taken and provisions made to keep the scale and surroundings free and protected from the grain, dust, and chaff.

Subp. 2. **Dust curtains.** The opening around the top of the scale hopper and around the outlet of the bottom shall be closed by canvas curtains, so arranged and installed that the outward flow of dust and chaff will be prevented and yet not interfere with the scale action.

Statutory Authority: *MS s 239.06*

7600.4200 OIL TANK SCALES.

Subpart 1. **Capacity.** The scale tank shall be of a capacity in commodity weight not greater than the rated capacity of the scale levers.

Subp. 2. **Construction.** It shall be a substantially constructed, nonleaking tank with the bottom so formed that there will be a complete minimum drain-out when emptied.

Subp. 3. **Oil inlet pipe.** The pipe line used in running the oil into the scale tank shall not extend down into the oil nor shall it be connected to the tank or any live part of the scale and there shall be no dripping or leakage after the flow of oil has been shut off.

Subp. 4. **Discharge valve.** The discharge valve shall be of a substantial nonleaking type. It shall be attached firmly to the bottom of the scale tank so as to become a permanent fixed part of the live part of the scale. It shall operate freely to avoid disturbance of the scale parts.

Subp. 5. **Discharge pipe line.** The discharge line shall be one-way, direct pipe to the car or receiving unit. It shall be free from pockets or any sagging or leaking condition. The pipe connection to the discharge valve shall be a tight screw-controlled union joint that can be disconnected and the pipe moved away from the valve so as to provide a clearance space of at least one inch between the end of the pipe and the valve.

Subp. 6. **Working of valves.** All valves in the discharge line that are used in connection with and control the flow of oil to various points from the scale tank, shall be plainly marked, indicating to what point each line leads, and the open and closed position of each valve. All such valves, as well as the markings showing the open and closed position of same, shall be plainly visible from a position in front of the scale weighbeam. Also, an indicator shall be provided that will show the connected or disconnected position of the union joint connection to the discharge valve.

Statutory Authority: *MS s 239.06*

7600.4300 FULL CAPACITY HOPPER BEAM SCALE.

A full capacity hopper beam may be installed with a minimum graduation of either five or ten pounds, provided it is installed in a beam house that is reasonably dustproof.

Statutory Authority: *MS s 239.06*

7600.4400 SCALE TOLERANCES.

Subpart 1. **Railroad track scales.** The permitted tolerance for railroad track scales used in commercial weighing, including the weighing of coal, hay, and straw, shall not exceed one pound per 1,000 pounds.

Subp. 2. **Grain track scales.** The permitted tolerance on track scales, on which grain and its by-products are weighed, shall not exceed one-half pound per 1,000 pounds.

Subp. 3. **Beam hopper scales and oil tank scales.** The permitted tolerance on beam hopper scales, including ratio tests, shall not exceed one-fourth pound per 1,000 pounds of test load applied.

Statutory Authority: *MS s 239.06*

7600.4500 SENSIBILITY RECIPROCAL OF SCALES.

Subpart 1. **Railroad track scales.** The permitted S.R. on railroad track scales used in the weighing of grain or its by-products, shall not exceed 40 pounds and on other track scales 50 pounds.

Subp. 2. **Hopper and oil tank scales.** The permitted S.R. on hopper and oil tank scales shall not exceed 15 pounds.

Statutory Authority: *MS s 239.06*

7600.4600 COUNTERPOISE WEIGHTS.

The permitted tolerance to be allowed on calibration of counterpoise weights shall not exceed the values given in the following table:

Actual Value	Ratio-Value	Tolerance In Grains
1 pound	1,000 pounds	1.0
2 pounds	2,000 pounds	1.5
4 pounds	4,000 pounds	2.0
8 pounds	8,000 pounds	3.0

Statutory Authority: *MS s 239.06*

7600.4700 SEMIAUTOMATIC PRINTING SCALES.

Subpart 1. **Minimum graduations.** The minimum graduations on automatic printing scales shall not exceed those established by the following table for the capacities shown:

Capacity	Minimum Graduation
1,000 through 5,000	1 pound
5,001 through 10,000	2 pounds
10,001 through 25,000	5 pounds
25,001 through 50,000	10 pounds
50,001 through 100,000	20 pounds

For any capacities above those shown special approval shall be required.

Subp. 2. **Printing mechanisms.** Automatic scales shall be equipped with printing mechanisms.

If the weight indication is a printed record comprising figures only, there shall be added to the tolerance which would otherwise be appropriate, an amount equal to 50 percent of the value of the increment between indications that can be printed by the device.

Statutory Authority: *MS s 239.06*

7600.4800 SCALES AND TOLERANCES DEFINED.

Subpart 1. **Grain scale.** A grain scale is either a track scale, truck scale, or a hopper scale on which the principal or main commodity weighed is grain or a grain by-product.

Subp. 2. **Industry track scale.** An industry track scale is a track scale owned and operated by an industry.

Subp. 3. **Railroad track scale.** A railroad track scale is a track scale owned and operated by a railroad.

Subp. 4. **State weight scale.** A state weight scale is a scale on which grain and its by-products, or hay, straw, or coal are weighed by a bonded state weigher and an official state weight certificate is issued on such weight.

Subp. 5. **Tolerance.** Tolerance means a value fixing the limit of allowable error or departure from true performance or value.

Subp. 6. **Track scale.** A track scale is a scale used for the weighing of railroad cars and the commodities carried in such cars.

Statutory Authority: *MS s 239.06*

AUTOMATIC BULK WEIGHING SYSTEMS, SPECIFICATIONS, AND TOLERANCES

7600.4900 SPECIFICATIONS AND TOLERANCES.

Subpart 1. **Stability of balance condition.** When the weighbeam or indicator of a scale is displaced from a position of equilibrium to the full extent allowed by the construction of the scale, it shall return to this position after release. When a scale is equipped with a locking device or a relieving device or unit weights, repeated operation of the locking or relieving device or repeated application or removal of unit weights shall not materially affect the balance condition of the scale.

Subp. 2. **Interchange or reversal of parts.** If a scale has interchangeable or reversible parts, these shall be so constructed that their interchange or reversal will not affect the bal-

ance or the accuracy of the instrument. Scale parts which are susceptible of interchange or reversal in normal field assembly either shall be so constructed that their interchange or reversal will not materially affect the accuracy of the scale or the parts shall be so marked as to indicate proper positions.

Subp. 3. **Assembly plans.** See part 7600.0400 which provides that assembly plans be furnished. These plans must be approved before the scale may be installed.

Statutory Authority: *MS s 239.06*

7600.5000 WEIGHT GRADUATIONS.

Subpart 1. **Character, width, marking.** Weight graduations on a weighbeam or reading face shall be clear and distinct and in no case shall their width be less than 0.008 inch, nor more than the width of a minimum clear interval between the graduations. On any bar of a beam, all graduations shall be equal in width. On any reading face corresponding graduations shall be equal in width, and main graduations shall not be more than 50 percent wider than subordinate graduations. The graduations on a beam or reading face shall be of such character and arrangement and shall be so numbered that all weight indications may be accurately read.

Subp. 2. **Clear interval between graduations.** The clear interval between weight graduations on a weighbeam or reading face shall not be less than 0.03 inch. This interval is to be measured between the adjacent edges of successive graduations representing the smallest subdivision and along the line of travel of the index of the indicator or poise. The required interval shall be maintained whether or not the graduations are "staggered" or arranged alternately; that is, when the graduations are staggered the interval shall be construed to be the space from one graduation to the next consecutive graduation extended, if necessary, to intersect the line of measurement. When the graduations on a reading face are not parallel, the interval shall be construed to be the widest separation of the graduations which is included within the travel of the index of the indicator. When the graduations are not equally spaced throughout the range of a reading face, the interval is to be measured between the graduations most closely spaced.

Statutory Authority: *MS s 239.06*

7600.5100 BALANCING AND LEVELING MEANS.

A scale shall be provided with a mechanical device or other means by which the balance condition may be adjusted. All loose material used for the balancing of a scale shall be securely enclosed.

Statutory Authority: *MS s 239.06*

7600.5200 FACILITATION OF FRAUD.

A scale shall be of such design and construction that it does not facilitate the perpetration of fraud.

Statutory Authority: *MS s 239.06*

7600.5300 PROTECTION.

The installation of any scale shall be such as to ensure the necessary protection for the lever system and the under side of the platform against wind and weather effects.

Statutory Authority: *MS s 239.06*

7600.5400 SHIFT TEST OF SCALES.

A scale having four main load bearings shall give results accurate within tolerances when a load of one-quarter capacity or less is placed so that its center of gravity lies as nearly as may be over any one of the main load bearings.

Statutory Authority: *MS s 239.06*

7600.5500 INDICATING ELEMENTS ON AUTOMATIC-INDICATING SCALES.

Subpart 1. **Attachment.** On an automatic-indicating scale, the reading face, or the indicator, whichever is designed as the stationary element, shall be securely fixed in position; the moving element of the combination shall be securely attached to its operating mechanism.

However, the specification shall not be construed to prohibit the employment of a movable auxiliary reading face or a movable auxiliary indicator designed to be rotated or moved in reference to a fixed reading face or a fixed indicator, respectively, for the purpose of "balancing out" tare weights or for similar uses.

Subp. 2. Zero indication. An automatic-indicating scale shall have a definite and clear zero indication and shall be susceptible of giving an indication back of the zero graduation sufficient clearly to disclose an out-of-balance condition. These requirements shall be fulfilled whether the entire reading face is graduated or the graduations commence at a fixed load.

Subp. 3. Design. A weight indicator on an automatic-indicating scale shall be so designed and constructed that its indications are definite and may be read with precision.

Subp. 4. Length. The indicator shall reach to the graduations; or if the indicator and the reading face are in the same plane then there shall not be a separation of the ends of the graduations and the end of the indicator of more than 0.03 inch, this distance to be measured along the line of the graduations.

Subp. 5. Width. The relation between the widths of the indicator and the graduations with which it cooperates shall be as follows: If all graduations are of equal width, the width of the index of the indicator shall be equal to the width of the graduations; if main graduations are wider than subordinate graduations, the width of the index of the indicator shall not exceed the width of the main graduations and shall not be less than the width of the subordinate graduations. When an indicator extends along the entire length of a graduation, then that portion of the indicator which may be brought into coincidence with the graduation shall be the same width throughout.

Statutory Authority: *MS s 239.06*

7600.5600 DAMPING DEVICE.

An automatic-indicating scale shall be equipped with an effective dashpot or other equivalent damping means whenever the incorporation of such a device is necessary in order to bring the indicating elements quickly to rest.

Statutory Authority: *MS s 239.06*

7600.5700 UNIT WEIGHTS.

The total value of all unit weights in place at any time shall be automatically indicated on the reading face. The mechanism for applying and removing unit weights shall be positive in its operation and shall provide for the rapid addition and removal of unit weights; it shall be controlled by some means conveniently located and operated in a simple manner from the outside of the housing; it shall function properly irrespective of the speed of operation.

Statutory Authority: *MS s 239.06*

7600.5800 SECURITY OF ADJUSTMENT OF AUTOMATIC-INDICATING ELEMENT.

A pendulum, a spring, or other corresponding automatic-indicating weighing element shall be securely held in adjustment and shall not be adjustable from the outside of the scale; that is, a partial disassembling of the scale mechanism or of the housing shall be required to reach any adjustable parts provided. This requirement is not to be construed to include within its purview the means provided for adjusting the zero balance condition of a scale.

Statutory Authority: *MS s 239.06*

7600.5900 INCREASING-AND-DECREASING-LOAD TEST ON AUTOMATIC-INDICATING SCALES.

When tests are being made with both increasing and decreasing loads on an automatic-indicating scale, the indications on all increasing loads shall be within the regular tolerances specified, and also at any given load the range between corresponding observations for increasing and decreasing loads shall not be greater than the sum of the tolerances in excess and deficiency for the load in question.

Statutory Authority: *MS s 239.06*

7600.6000 SUITABILITY AND MAINTENANCE OF EQUIPMENT.

Weighing equipment shall be suitable for the service in which it is used with respect to all elements of its design, including but not limited to its weighing capacity, the character, number, size, and location of its indicating or recording elements, and the value of its minimum graduated interval.

All equipment in weighing service and all mechanisms and devices attached thereto or used in connection therewith shall continuously be maintained in proper operating condition throughout the period of such service.

Statutory Authority: *MS s 239.06*

7600.6100 USE OF ADJUSTMENTS.

Weighing elements that are adjustable shall be adjusted only to correct those conditions that such elements are designed to control, and shall not be adjusted to compensate for defective or abnormal installation of accessories or for badly worn or otherwise defective parts of the assembly. Any faulty installation conditions shall be corrected, and any defective parts shall be renewed or suitably repaired before adjustments are undertaken. Whenever equipment is adjusted, the adjustments shall be so made as to bring performance errors as close as practicable to zero value.

Statutory Authority: *MS s 239.06*

7600.6200 METHOD OF OPERATION.

Equipment shall be operated only in the manner that is obviously indicated by its construction or that is indicated by instructions on the equipment.

Statutory Authority: *MS s 239.06*

7600.6300 ASSISTANCE IN TESTING OPERATIONS.

If the design, construction, or location of a large-capacity scale is such as to require a testing procedure involving special accessories or an abnormal amount of handling of test weights, such accessories and needed assistance in the form of labor shall be supplied by the owner or operator of the scale, as required by the state scale inspector.

Statutory Authority: *MS s 239.06*

7600.6400 ADJUSTMENT OF EQUIPMENT.

In adjusting equipment for accuracy, the effort should be to adjust as closely as practicable to zero error. Tolerances are primarily accuracy criteria for use by the state scale inspector. Equipment owners will not be permitted to take advantage of tolerances by deliberately adjusting their equipment to have a value or to give performance at or close to the tolerance limit, nor will the repair or service worker be permitted to bring equipment merely within tolerance range when, by the exercise of reasonable skill and with the expenditure of a reasonable amount of time and effort, adjustment closer to zero error can be accomplished.

Statutory Authority: *MS s 239.06*

History: *17 SR 1279*

7600.6500 GARNER AND SCALE VALVES.

Garner and scale valves must be equipped with an interlocking system so that it will be impossible for both to be open at the same time.

Statutory Authority: *MS s 239.06*

7600.6600 PROTECTION OF SCALES.

Subpart 1. **No unauthorized entry to tower.** Adequate safeguards must be provided to ensure that no one can enter the tower in which the scale and garner are enclosed while weighing is in progress.

Subp. 2. **Sealing facilities.** Adequate sealing facilities must be provided on all turn-heads leading to and from the scale.

Subp. 3. **Dialhead, console, and printing mechanism.** The dialhead, console, and printing mechanism must be so located as to be visible at all times to the weigher in order that the weigher can make a visual comparison of both the indicated and printed weight.

The dialhead, console, and printing mechanism must be located in a substantially dust-free room provided with temperature control which will ensure accuracy of operation.

Subp. 4. **Automatic bulk weighing installation.** No automatic bulk weighing installation will be permitted unless a satisfactory method of check weighing is provided at the site.

Subp. 5. **Imbalance.** The scale must be so designed that a condition of imbalance on the minus side of true zero will not register as zero on the recording mechanism.

Subp. 6. **Visual indicator.** The scale must be equipped with a visual indicating element, regardless of the existence of any printing or recording mechanism provided in addition thereto.

Statutory Authority: *MS s 239.06*

History: *17 SR 1279*

7600.6700 MINIMUM CAPACITY.

The minimum capacity of the scale hopper shall be 10,000 pounds, or equivalent bushel capacity based on 60-pound wheat.

For scales with a capacity of 10,000 to 25,000 pounds, the minimum graduation on the dial shall not exceed five pounds. For scales with a capacity in excess of 25,000 pounds, the minimum graduation on the dial shall not exceed ten pounds.

Statutory Authority: *MS s 239.06*

STANDARDS FOR COMMERCIAL WEIGHING AND MEASURING DEVICES

7600.6800 NBS HANDBOOK 44 INCORPORATED BY REFERENCE.

NBS Handbook 44 1985, Specifications, Tolerances, and other Technical Requirements for Weighing and Measuring Devices, as adopted by the 69th National Conference on Weights and Measures and published by the United States Department of Commerce, National Bureau of Standards, (Washington, D.C., Nov. 1984) is incorporated by reference subject to the following exceptions:

A. If NBS Handbook 44 1985 contains any provisions contrary to the laws of Minnesota or the rules of the Minnesota Department of Public Service, Minnesota law and department rule govern.

B. The final sentence of NBS Handbook 44 1985, section 2 (scale code), specification S.1.8.3., is deleted.

NBS Handbook 44 is located at the Minnesota State Law Library, 25 Constitution Avenue, Saint Paul, Minnesota and is not subject to frequent change.

Statutory Authority: *MS s 239.06*

History: *10 SR 998*

7600.6900 FUEL PUMP SALES; MEASUREMENT AND PRICE COMPUTATION.

The following are permissible methods for measurement and price computation of fuel pump sales:

- A. Measurement and price computation per gallon;
- B. Measurement and price computation per liter; and
- C. Measurement and price computation per half-gallon.

However, equipment placed in service after December 31, 1982, shall not use C, and after December 31, 1983, all measurement and pricing by half-gallon shall be permanently discontinued.

Statutory Authority: *MS s 239.06*

7600.7000 ADVERTISEMENTS.

Regardless of the method used in part 7600.6900, all roadside signs and similar advertisements of motor fuel offered for retail sale shall indicate the price per gallon or price per liter.

Statutory Authority: *MS s 239.06*

7600.7100 LITER-GALLON PRICE COMPARISON.

In the case of per liter sales there shall be posting of per gallon and per liter prices at the device, service island, and premises of the establishment in accordance with state and local laws, regulations, and ordinances. Posting shall be in a manner which facilitates consumer comparison between the per gallon price and the per liter price.

Statutory Authority: *MS s 239.06*

7600.7200 ANIMAL AND LIVESTOCK SCALE.

Subpart 1. Tolerances. The basic maintenance tolerance is one pound per 1,000 pounds of test load (0.1 percent). The acceptance tolerance is one-half of the basic maintenance tolerance.

Subp. 2. Shift test tolerance. A shift test must be conducted on animal and livestock scales. The maximum test load is one-fourth of the scale capacity. A scale may be approved if the sum of the indicated errors for two load-bearing readings in the same section is within tolerance.

Subp. 3. Section, defined. "Section" means a pair of main load-bearing points arranged so that the vertical plane passing through the centers of both points is perpendicular to the longitudinal axis of the scale platform.

Statutory Authority: *MS s 239.06*

History: *10 SR 998*

7600.7210 SCALES, SENSITIVITY REQUIREMENT.

For a scale not equipped with a balance indicator, but with a minimum graduated interval less than ten pounds, the sensitivity requirement is three times the value of the minimum graduated interval or 15 pounds, whichever is less.

Statutory Authority: *MS s 239.06*

History: *10 SR 998*

SCALES AND WEIGHING DEVICES; SPECIFICATIONS.**7600.7300 PIVOTS.**

Subpart 1. Positioning. All pivots or knife-edges shall be firmly secured in or to the levers.

Subp. 2. Material. The material used for pivots shall be either:

A. special alloy pivot steel (SAE 6195 or 52100) hardened to Rockwell C scale not less than 58;

B. carbon steel hardened to Rockwell C scale not less than 60; or

C. agate may be used for prescription scales and balances.

Subp. 3. Design. All pivots shall be sharp and bear throughout the entire length of the parts designed to be in contact.

Statutory Authority: *MS s 239.06*

7600.7400 BEARINGS.

Subpart 1. Finish of bearing steels. The bearing surfaces shall be brought to a smooth, true, and accurate finish to insure continuity of contact with opposing pivots. The term "bearing" used in these specifications refers to the entire surface which is designed to be in contact with the edge of a knife-edge or pivot.

Subp. 2. Material. The requirements shall be the same as those set forth in part 7600.7300, subpart 2, items A and B.

Statutory Authority: *MS s 239.06*

7600.7500 VEHICLE AND LIVESTOCK SCALE APPROACHES.

Subpart 1. Before January 1, 1986. A vehicle scale shall have at least 12 feet or a distance equal to one-third of the deck length, whichever is greater, of straight hard surface driveway on either end of the scale not over one-third inch per foot out of level of platform. The first six feet on both ends shall be constructed of reinforced concrete.

Subp. 2. **After December 31, 1985.** For vehicle and livestock scales installed after December 31, 1985, each end of the scale must have a straight, paved approach which meets the following requirements:

A. Approaches must be at least as wide as the scale platform and at least ten feet long or one-third of the scale platform length, whichever is greater.

B. The first ten feet of each approach must be a reinforced concrete approach panel, one end of which rests on an extension of the scale foundation end wall. The remaining length of each approach may be concrete or asphalt.

C. Approaches should be sloped down from the scale platform. Maximum slope allowed is one-third inch per foot. Approaches must not be sloped up from the scale platform.

D. For above-ground scales, the foundation end walls must have wing wall extensions or the sides of the approaches must be paved so that fill material cannot fall under the scale platform.

Statutory Authority: *MS s 239.06*

History: *10 SR 998*

7600.7600 PROPER POSITION OF WEIGHING AND MEASURING DEVICES USED IN TRADE FOR VENDING.

The position or location of all weighing and measuring devices shall be determined by the Weights and Measures Division, but in no case shall the device be placed for use in such a position or location that the indications cannot be easily read by all parties interested. The permissible distance between the device and a reasonable customer position will depend upon the size and character of the indicating elements of the device.

Statutory Authority: *MS s 239.06*

7600.7700 SUBMISSION OF PLANS.

Subpart 1. **Scales installed by buyer.** For scales needing assembly or foundation construction by the buyer, the manufacturer must provide to the buyer complete plans, drawings, and instructions for assembling and installing the scale and for building the foundation. If potential rule violations are anticipated, the Weights and Measures Division may require the buyer to submit plans to the division before construction.

Subp. 2. **Above-ground vehicle and livestock scales.** The buyer of an above-ground vehicle or livestock scale must submit complete plans and drawings of the scale and foundation to the Weights and Measures Division before installation of the scale. The drawings must show the existing grade level at the scale site. The division shall approve scales for commercial use only if the plans comply with the requirements of this chapter or if a variance is issued under the requirements of part 7600.9800.

Statutory Authority: *MS s 239.06*

History: *10 SR 998*

7600.7750 PROTECTION FROM ENVIRONMENT.

Subpart 1. **Outdoor scales.** The Weights and Measures Division shall require special environmental protection for an outdoor scale if the division finds that the scale is adversely affected by weather or other environmental factors. Environmental protection includes:

A. belting or other suitable material to cover the clearance around the scale platform;

B. wind skirts, wind walls, or effective foundation heating for above-ground scales;

C. an improved drainage system or sump pump for pit-type scales;

D. special shielding or weatherproofing of the scale indicator;

E. a complete building to protect the scale from the weather;

F. modifications, shielding, and other special measures to protect electronic scales from radio frequency interference and electromagnetic interference.

Subp. 2. **Fertilizer scales.** Hopper, tank, and mixer scales used for weighing dry or liquid bulk fertilizer must be completely enclosed in a building.

Statutory Authority: *MS s 239.06*

History: *10 SR 998*

7600.7800 LIVESTOCK SCALES.

Livestock scales in sales pavilions, buying stations, stockyards, and packing plants shall be equipped with full capacity type-registering weighbeams or automatic weight recorders.

Statutory Authority: *MS s 239.06*

7600.7900 SCALE PITS.

Subpart 1. **Generally.** Vehicle and livestock scales installed after December 31, 1985, must be installed on a reinforced, poured concrete foundation. Scales may be installed in a pit or on a slab above grade level. In either case, the foundation footings must extend below the local frost line. The foundation must be designed to support the weight of the scale and the anticipated maximum load on the scale without significant settling or cracking. Weighing element stands or bases must be securely bolted to the foundation. Space between a stand or base and the foundation must be filled with nonshrinking grout.

Subp. 2. **Pit-type scale foundation.** A pit-type vehicle or livestock scale foundation must meet the following requirements:

A. The walls, floors, footings, and weighing element support piers must be reinforced, poured concrete.

B. The clearance between the bottom of the weighbridge or other main structural member and the surface of the pit floor must be at least 48 inches.

C. For outdoor scales, the pit floor must have an effective drain system so that the pit floor remains reasonably dry and clean.

D. For outdoor scales, the tops of the pit walls must be above the existing grade level so that water will drain away from the scale.

Subp. 3. **Above-ground scale foundation.** An above-ground vehicle or livestock scale foundation must meet the following requirements:

A. The slab foundation must be poured integrally or interlocked with piers located directly below the scale load-bearing points.

B. The foundation must have end walls to prevent fill material from interfering with scale operation.

C. Where platform construction techniques allow, the surface of the foundation slab must be sloped down from the longitudinal centerline to each side to prevent dirt accumulation under the platform.

D. The clearance between the bottom of the weighbridge or other main structural member and the slab surface must be at least six inches for vehicle scales and at least 12 inches for livestock scales.

E. The scale platform, structural members, and foundation surfaces must be designed to allow access for cleaning under the scale platform and around all weighing elements.

F. For outdoor scales, the entire slab surface must be above the existing grade level so that water will drain away from the scale.

G. An effective heating system must be installed in the slab to prevent ice and snow accumulation under the platform and on the end walls.

H. An above-ground scale must be installed on a foundation slab above the existing grade level or in a pit which conforms to the requirements of subpart 2. Other methods of installation will not be approved.

Statutory Authority: *MS s 239.06*

History: *10 SR 998*

7600.8000 [Repealed, 10 SR 998]

LIQUEFIED PETROLEUM GAS LIQUID MEASURING DEVICES

7600.8100 TEMPERATURE CORRECTION OF LIQUID METERS FOR LIQUEFIED PETROLEUM GAS.

When liquefied petroleum gas is sold or delivered to a consumer as a liquid and by liquid measurement, the volume of liquid so sold and delivered shall be corrected to a temperature of 60 degrees Fahrenheit through use of the volume correction table that follows, or through use of an approved meter with sealed automatic compensating mechanism. All sale tickets shall show the delivered gallons, the temperature at the time of delivery, and the corrected gallonage, or shall state that temperature correction was automatically made. This section shall not apply to unit sales or deliveries made direct to mobile fuel tanks consisting of less than 100 gallons.

VOLUME CORRECTION FACTOR TABLE: Specific Gravities at 60° F/60° F

Table with columns for Temp. Degrees Fahr. (0 to 115) and Volume Correction Factors for various specific gravities (0.500 to 0.970). The table is organized into blocks of 10 rows each, with specific gravity values increasing from left to right across the rows.

To convert from measured volume at another temperature to net volume at 60 degrees Fahrenheit; measure the volume and temperature, determine the gravity at 60 degrees Fahrenheit, refer to the column corresponding to this gravity, and read the volume conversion factor opposite the observed temperature. Multiply the observed volume by this factor to obtain the volume at 60 degrees Fahrenheit.

Statutory Authority: MS s 239.06

7600.8200 SALES OF COMMODITIES.

Subpart 1. **Sale by net weight.** The word "weight" as used in this rule in connection with any commodity means net weight. Whenever any commodity is sold on the basis of weight, the net weight of the commodity shall be employed, and all contracts concerning commodities shall be so construed.

Subp. 2. **Retail sales of meat and meat processing.** In the retail sale of meat in quantities larger than the usual retail cuts, such quantities generally described as sides, quarters, ribs, chucks, rounds, loins, whole or half hog and said sale requires the aforementioned larger portions to be processed into smaller portions such as roasts, steaks, chops, etc., there shall be rendered to the purchaser at the time of delivery, a delivery or sales ticket in ink or other indelible substance, on which shall be clearly and legibly stated:

- A. the name and address of the vendor;
- B. the name and address of processor if other than vendor;
- C. the date;
- D. the name and address of the purchaser;
- E. the identity of product and the quality or grade if graded;
- F. the unit price (the price per pound of either the cut or uncut portion as the case may be);
- G. the net weight of portion prior to processing;
- H. the net weight of the delivered quantity; and
- I. the total number of packages delivered and the number and kinds of cuts per package.

And provided further that the weights in G. and H. shall be recorded to the nearest one ounce on all weights up to and including 30 pounds, four ounces from 30 pounds up to and including 100 pounds, and one pound over 100 pounds.

Subp. 3. **Compliance.** The provisions of subpart 2, other than item E relating to grade, shall be complied with when the commodity submitted for processing, either live or partially processed, is the property of the person submitting the commodity, and the fee involved is wholly for service.

Statutory Authority: *MS s 239.06*

7600.8300 RANDOM-SIZED PACKAGES TO CONTAIN UNIT PRICE.

All meat, meat products, poultry, fish, and seafood which are packaged or wrapped by the retailer in advance of being exposed or offered for sale by the retailer and the packages being of a lot containing varying weights, measures, or counts, shall be accurately marked with the net weight or standard measure or numerical count over six; the selling price per pound or unit of standard measure; and the total selling price. The term "random package" shall be construed to mean a package that is one of a lot, shipment, or delivery of packages of the same consumer commodity with varying weights; that is, packages of the same consumer commodity with no fixed pattern of weight, measure, or count.

Statutory Authority: *MS s 239.06*

VOLUNTARY REGISTRATION OF SERVICE PERSONS**7600.8400 DEFINITIONS.**

Subpart 1. **Commercial weighing and measuring device.** The term commercial weighing and measuring device shall be construed to include any weight or measure or weighing or measuring device commercially used or employed in establishing the size, quantity, extent, area, or measurement of quantities, things, produce, or articles for distribution or consumption, purchased, offered, or submitted for sale, hire, or award, or in computing any basic charge or payment for services rendered on the basis of weight or measure, and shall also include any accessory attached to or used in connection with a commercial weighing or measuring device when such accessory is so designed or installed that its operation affects, or may affect, the accuracy of the device.

Subp. 2. **Commissioner.** Commissioner shall mean the commissioner of the Department of Public Service or a delegate.

Subp. 3. **Registered service persons.** Registered service persons shall mean any individual who for hire, award, commission, or any other payment of any kind, installs, services, repairs, or reconditions a commercial weighing or measuring device and who voluntarily registers as such with the commissioner.

Statutory Authority: *MS s 239.06*

History: *L 1987 c 186 s 15; 17 SR 1279*

7600.8500 VOLUNTARY REGISTRATION OF SERVICE PERSONS FOR COMMERCIAL WEIGHING AND MEASURING DEVICES.

Parts 7600.8400 to 7600.9700 on the voluntary registration of service persons for commercial weighing and measuring devices are promulgated under authority conferred upon the Department of Public Service to promulgate regulations for registration of weighing and measuring device repair persons.

Statutory Authority: *MS s 239.06*

7600.8600 VOLUNTARY REGISTRATION.

A service person may apply for voluntary registration to service weighing devices or measuring devices on an application form supplied by the commissioner. Said form, duly signed and verified, shall include certification by the applicant that: the service person is fully qualified to install, service, repair, or recondition whatever devices for the service of which competence is being registered, the service person has in possession, or available for use, all necessary testing equipment and standards, and the service person has full knowledge of all appropriate weights and measures laws, orders, and rules. An applicant also shall submit appropriate evidence or reference as to qualifications.

Statutory Authority: *MS s 239.06*

History: *L 1987 c 186 s 15*

7600.8700 REGISTRATION FEE.

The minimum charge for the calibration of testing equipment for issuance of placing-in-service permits shall be \$10.

Statutory Authority: *MS s 239.06*

7600.8800 RECIPROCITY.

The commissioner may enter into an informal reciprocal agreement with any other state or states that has or have similar voluntary registration policies. Under such agreement, the registered service person of the state party to the reciprocal agreement is granted full reciprocal authority, including reciprocal recognition of certification of standards and testing equipment, in all states party to such agreement.

Statutory Authority: *MS s 239.06*

History: *L 1987 c 186 s 15*

7600.8900 CERTIFICATE OF REGISTRATION.

Upon receipt and acceptance of a properly executed application form, initial examination and certification of standards and testing equipment to be used, and any other proof of competence the commissioner shall deem necessary, the commissioner shall, after having received the applicant's annual registration fee, issue to the applicant a certificate of registration, including an assigned registration number, which shall remain effective until either returned by the applicant or withdrawn by the commissioner.

Statutory Authority: *MS s 239.06*

History: *L 1987 c 186 s 15*

7600.9000 VOLUNTARY REGISTRATION.

The commissioner shall accept voluntary registration of individuals who provide acceptable evidence that they are fully qualified to install, service, repair, or recondition a commercial weighing or measuring device, have a thorough working knowledge of all appropriate weights and measures laws, orders, rules, and regulations and have possession of, or

available for use, weights and measures standards and testing equipment appropriate in design and adequate in amount.

This rule shall in no way preclude or limit the right and privilege of any qualified individual not registered with the commissioner to install, service, repair, or recondition a commercial weighing or measuring device.

Statutory Authority: *MS s 239.06*

History: *L 1987 c 186 s 15*

7600.9100 PRIVILEGES OF A VOLUNTARY REGISTRANT.

A bearer of a certificate of registration shall have the authority to remove an official rejection tag or mark placed on a weighing or measuring device by the authority of the commissioner, place in service, until such time as an official examination can be made, a weighing or measuring device that has been officially rejected; and place in service, until such time as an official examination can be made, a new or used weighing or measuring device. All work on weighing and measuring devices restored to service or placed in service shall be performed by or under the direct supervision of a bearer of a certificate of registration.

Statutory Authority: *MS s 239.06*

History: *L 1987 c 186 s 15*

7600.9200 RESPONSIBILITIES OF A VOLUNTARY REGISTRANT.

It shall be the responsibility of a bearer of a certificate of registration to comply with the provisions of National Bureau of Standards Handbook 44, and the Examination Procedure Outlines (E.P.O.'s) published by the National Bureau of Standards.

Statutory Authority: *MS s 239.06*

7600.9300 PLACED-IN-SERVICE REPORT.

The commissioner shall furnish each registered service person with a supply of report forms to be known as placed-in-service reports. Such a form shall be executed in triplicate, shall include the assigned registration number, and shall be signed by a registered service person for each rejected device restored to service and for each newly installed device placed in service. Within 24 hours after a device is restored to service, or placed in service, the original of the properly executed placed-in-service report, together with any official rejection tag removed from the device, shall be mailed to the Division of Weights and Measures, 1015 Currie Avenue, Minneapolis, Minnesota 55403. The duplicate copy of the report shall be handed to the owner or operator of the device, and the triplicate copy of the report shall be retained by the registered service person.

Statutory Authority: *MS s 239.06*

History: *L 1987 c 186 s 15*

7600.9400 STANDARDS AND TESTING EQUIPMENT.

A registered service person shall submit to the weights and measures laboratory, upon initial application for voluntary registration and at least annually thereafter, for its examination and certification, any standards and testing equipment that are used, or are to be used, in the performance of the service and testing functions with respect to weighing and measuring devices for which competence is registered. The cost of such inspection and certification shall be paid by the registrant in an amount based upon the standards laboratory fee schedule. A registered service person shall not use, in servicing commercial weighing or measuring devices, any standards or testing equipment that have not been certified by the commissioner.

Statutory Authority: *MS s 239.06*

History: *L 1987 c 186 s 15*

7600.9500 PUBLICATION OF LISTS OF APPROVED STANDARDS AND TESTING EQUIPMENT.

The commissioner shall publish from time to time as the commissioner deems appropriate, and may supply upon request, information concerning standards and testing equipment acceptable for use by registered service persons.

Statutory Authority: *MS s 239.06*

History: *L 1987 c 186 s 15; 17 SR 1279*

7600.9600 REVOCATION OF CERTIFICATE OF REGISTRATION.

The commissioner may inspect the work of a repair worker at any time and may, for good cause, after careful investigation and consideration, suspend or revoke a certificate of registration.

Statutory Authority: *MS s 239.06*

History: *L 1987 c 186 s 15; 17 SR 1279*

7600.9700 PUBLICATION OF LISTS OF REGISTERED SERVICE PERSONS.

The commissioner may publish, from time to time as the commissioner deems appropriate, and may supply upon request, lists of registered service persons.

Statutory Authority: *MS s 239.06*

History: *L 1987 c 186 s 15; 17 SR 1279*

7600.9800 VARIANCES.

Subpart 1. **Director to grant.** No commercial scale, commercial weighing device, or commercial measuring device which fails to comply with any rule in parts 7600.6800 to 7600.9700 shall be installed unless the director of the Division of Weights and Measures has first granted a variance to those rules for the scale or device.

Subp. 2. **Request.** To apply for a variance for any rule within parts 7600.6800 to 7600.9700, the owner or operator of the commercial scale or device must submit a request in writing to the Director of Weights and Measures. The request shall:

- A. explain why a variance is sought;
- B. explain how the applicant meets the criteria for a variance set forth in subpart 3;
- C. specify the desired alternative standard to the rule and demonstrate that under the alternative standard the scale or device will conform to good commercial practices; and
- D. provide a detailed plan showing the following: the dimensions for all parts of the scale or device; the materials from which those parts are made; and the construction of the scale or device, including its foundation and location.

Subp. 3. **Approval criteria.** No request for a variance shall be granted unless all the following criteria are met:

- A. the rule for which a variance is sought works an undue hardship on the applicant, or it is impossible for the applicant to comply with the rule;
- B. the variance sought will not work a harm to the public interest; and
- C. the director is able to determine, after investigation, that under normal operating conditions the scale or device for which a variance is sought will maintain the applicable accuracy standards, maintain the permanence of adjustments required, and contain operating parts which function as intended.

Subp. 4. **Denial.** No variance will be granted if it is a variance of a tolerance or would apply to the value of the minimum graduated interval of a device.

Subp. 5. **Response by the division to request.** All requests will be answered by the division in writing, setting forth the reasons for granting or denying the variance.

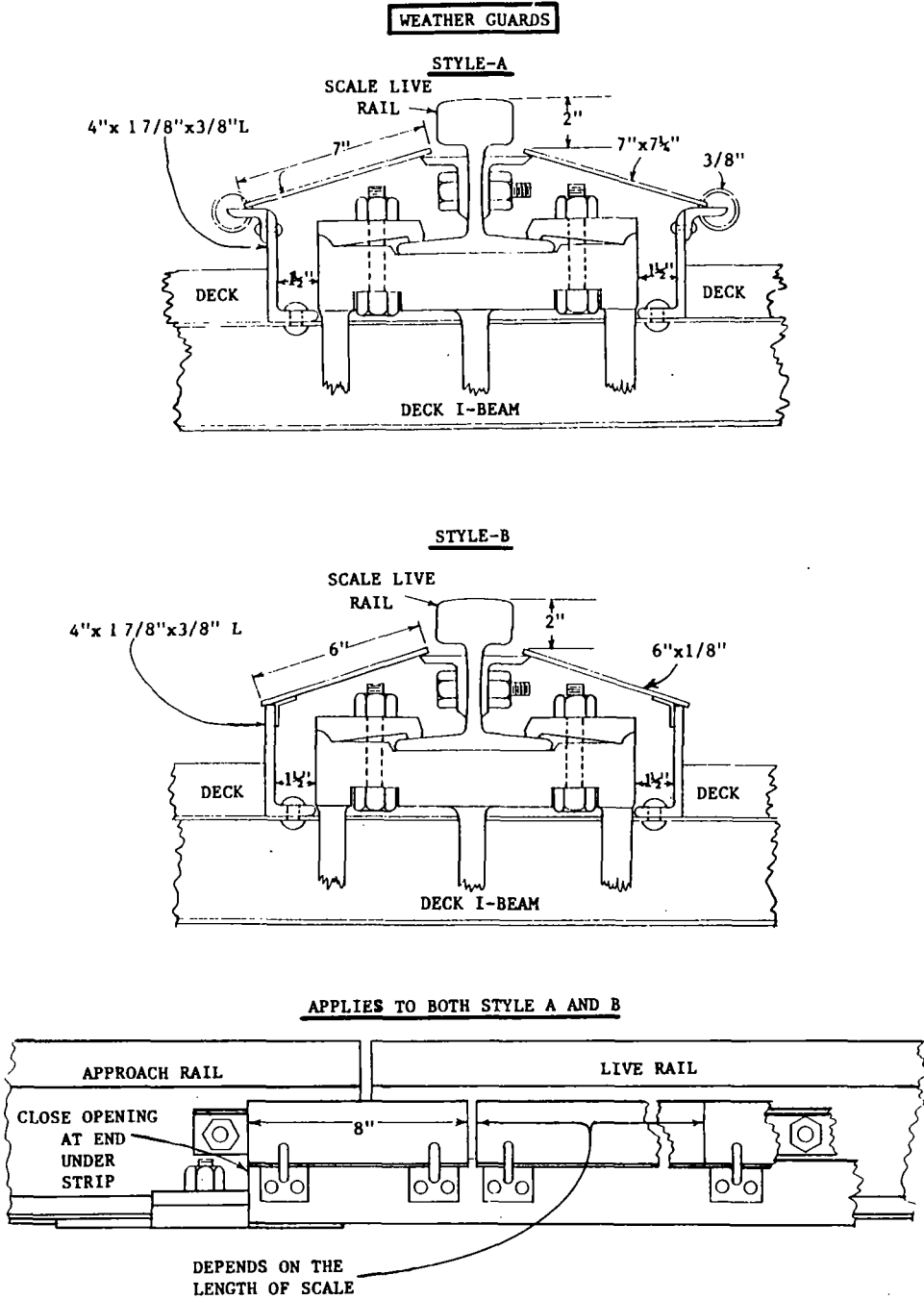
Statutory Authority: *MS s 239.06*

MINNESOTA RULES 1993

7600.9900 COMMERCIAL SCALES

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7600.9900 WEATHER GUARDS.



Statutory Authority: *MS s 239.081*